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COMPLETE SPECIFICATION.

Improvements in Sterilizing Apparatus.

We, JOHANN FRANZ HUGO GRONWALD, Apothecary, of 33 Kaiserstrasse, C., and EMIL HEINRICH CONRAD OEHLMANN, Engineer, of 70 Dresdener Strasse, S., both of Berlin in the German Empire, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly
5 described and ascertained in and by the following statement :—

Our improvements relate to that kind of sterilizing apparatus in which bottles or vessels contained in a closed vessel or pan are closed by means of a presser or closing piece inside the closed vessel or pan operated from the outside of the same, and consists in arrangements for bringing said presser or closing pieces into action
10 by means of liquid, steam or air, or other fluid pressure, produced or controlled by outside appliances.

On the sheet of drawings appended hereunto two arrangements of apparatus are shown for carrying our invention into effect,

Figure 1 showing the application of water or other liquid pressure, and
15 Figure 2 that of liquid steam or compressed air pressure.

The tray carrying the bottles or other vessels may be moveable and the presser stationary, or the tray may be stationary and the presser moveable.

The lower part of the heating vessel or pan A contains the bottle tray B, provided in the usual way with compartments *a* for the bottles C. The moveable part,
20 which as hereinbefore stated may be either the tray B or the presser D, is attached by a rod to a piston or plunger E, said rod passing through the bottom of the vessel A, when the tray is moveable (Fig. 1) or through the said bottom and the tray when the presser is moveable (Fig. 2). The piston or plunger moves in a cylinder E¹, arranged underneath the chamber A and provided with inlet pipes for
25 the admission of the actuating fluid.

The apparatus is worked in the following manner : The heating vessel A is filled with water which is made to boil by means of steam, or is directly heated by steam. The bottles C, filled for instance, with milk, are placed into the vessel A and their stoppers and locking wires placed loosely upon them, so that they can be closed by
30 the presser D. The upper part G of the vessel A is then placed upon the lower part. An air-tight joint is not necessary, as the steam generated inside the sterilizing apparatus will drive out the air contained in the same and effectually prevent the entry of fresh air into the vessel from the outside.

When the sterilizing process has been completed, the pressing fluid is allowed to
35 act upon the piston or plunger. In the arrangement shown by Fig. 1 this is done by screwing down a piston *b* in the cylinder H by means of the hand wheel *c*, so that the water or other liquid contained in the cylinder H below the piston *b* is forced through the pipe F into the press cylinder E¹ below the plunger E. The bottle tray B is thereby pushed up and the locking wire loops of the bottles are carried
40 against the presser D and closed as the tray rises higher. The piston *b* is then screwed back or upwards and the tray B descends in consequence of its own weight and forces back the liquid into the cylinder H. Instead of the cylinder H and piston *b* a force pump of any ordinary construction may be used.

In the arrangement of apparatus shewn by Fig. 2, steam, compressed air, water
45 or other liquid under pressure is used and the presser D moved by it in both directions, *i.e.* upwards and downwards. For this purpose the pipe supplying the pressure fluid is fitted with a four-way cock K to which a pipe *f* leading to the underside and another pipe *f*¹ leading to the upper side of the piston E are connected, so that by changing the position of the four-way cock the fluid is
50 admitted to one or the other side of the piston and exhausted from the opposite

Gronwald & Oehlmann's Improvements in Sterilizing Apparatus.

side, and the presser D thus moved down or up for pressing the stoppers into the bottles and receding from the same. With the arrangement of moveable bottle tray shewn by Fig. 1, fluids under pressure may obviously be used to lift the tray, and discharged into exhaust pipes for lowering the same, three-way cocks or their equivalents being used in this case. 5

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is :

Firstly. In combination with sterilizing apparatus the arrangement of cylinders with pistons or plungers actuated by fluids under pressure, for raising a moveable bottle tray against a presser or closing piece or for moving down a presser or closing piece against a bottle tray contained inside said sterilizing apparatus, substantially as hereinbefore described and for the purpose set forth. 10

Secondly. The arrangement or construction of sterilizing apparatus with appliances for lifting the moveable bottle tray by means of fluid pressure substantially as hereinbefore described with reference to Fig. 1 of the drawings and for the purpose set forth. 15

Thirdly. The arrangement or construction of sterilizing apparatus with appliances for lowering and raising the moveable presser by means of fluid pressure substantially as hereinbefore described with reference to Fig. 2 of the drawings and for the purpose set forth. 20

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Fig. 1.

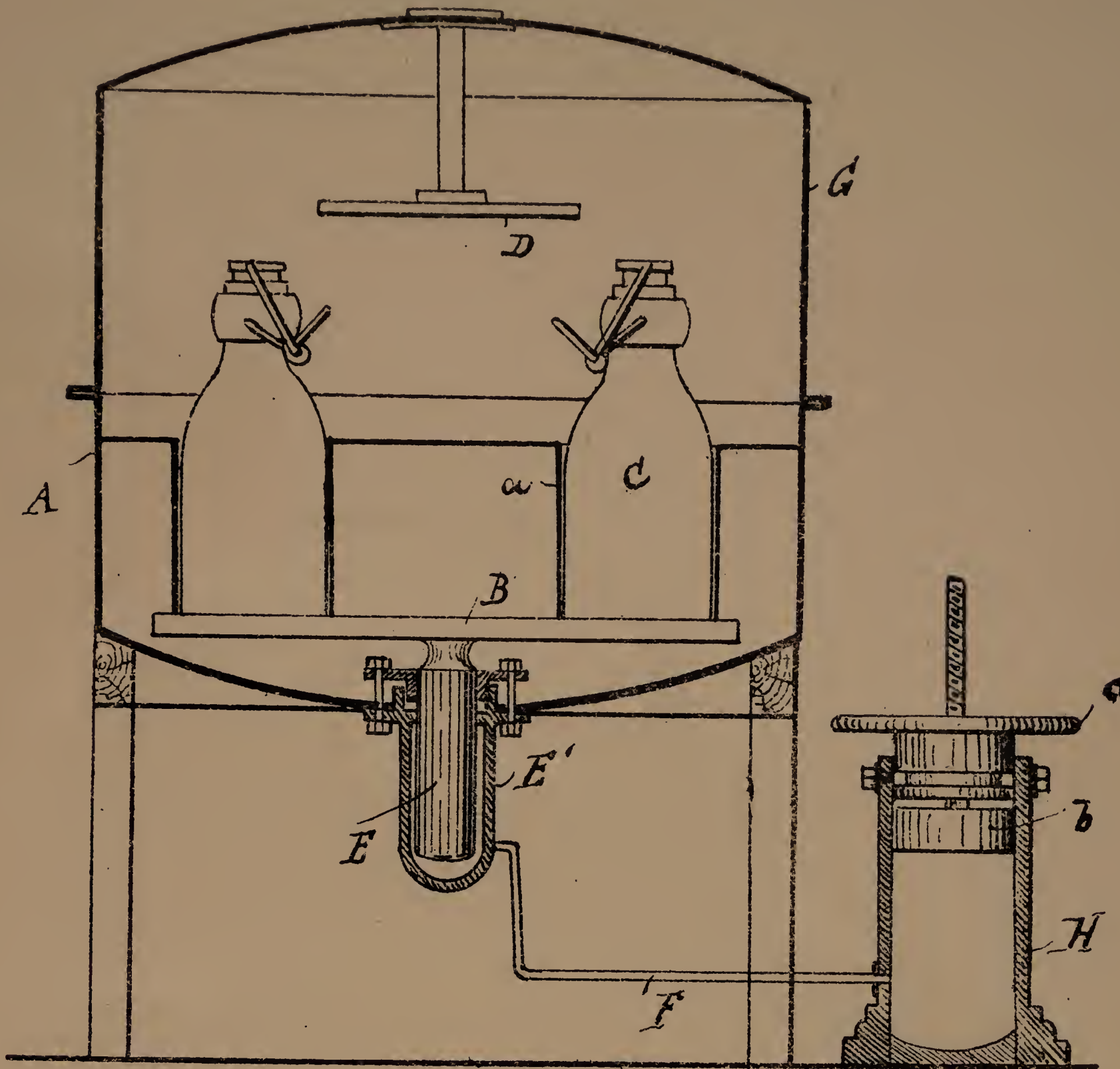
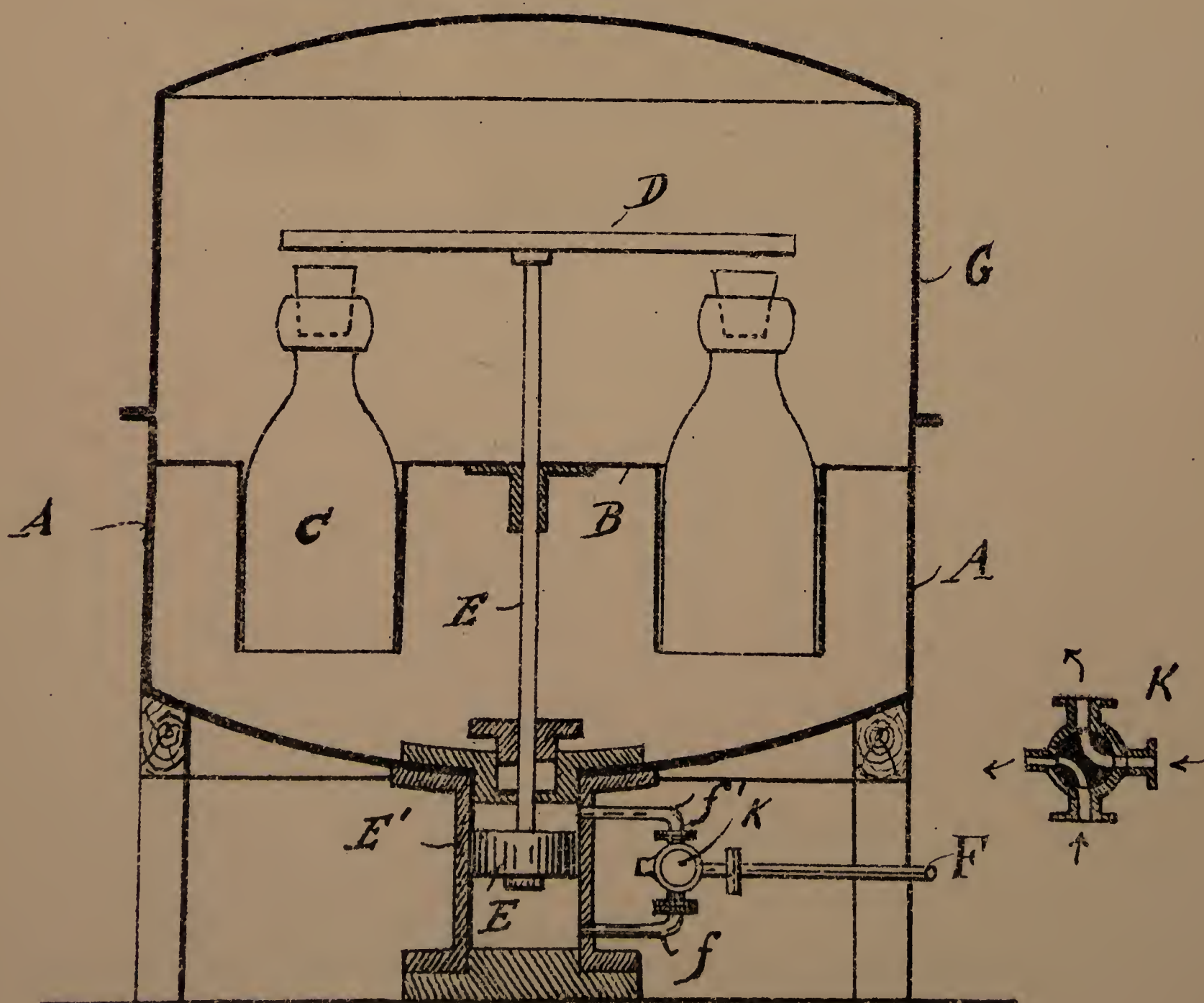


Fig. 2.



[This Drawing is a reproduction of the Original on a reduced scale]

